Electronic TUBES

12AD6

HEPTODE

FOR PENTAGRID CONVERTER APPLICATIONS IN AUTOMOBILE RECEIVERS

DESCRIPTION AND RATING

The 12AD6 is a miniature heptode primarily intended to perform the combined functions of mixer and oscillator in automobile radio receivers. The tube is specially designed to operate with plate and screen voltages supplied directly from a 12-volt storage battery.

GENERAL

ELECTRICAL

Cathode—Coated Unipotential

Heater Voltage, AC or DC	12.6*	Volts
Heater Current	0.15	Amperes

Direct Interelectrode Capacitances	With Shield†	Without Shield	
Grid-Number 3 to All	8.0	8.0	μμf
Plate to All	13	8.0	μμf
Grid-Number 1 to All	5.5	5.5	μμf
Cathode to All Except Grid-Number 1	20	15	μμf
Grid-Number 3 to Plate, maximum	0.25	0.3	μμf
Grid-Number 1 to Grid-Number 3, maximum	0.15	0.15	μμf
Grid-Number 1 to Plate, maximum	0.05	0.1	μμf
Grid-Number 1 to Cathode	3.0	3.0	μμf

MECHANICAL

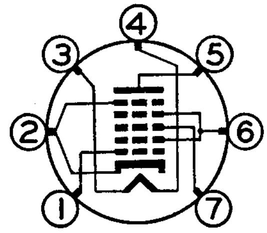
Mounting Position—Any
Envelope—T-5½, Glass
Base—E7-1, Miniature Button 7-Pin

MAXIMUM RATINGS

DESIGN-CENTER VALUES

Plate Voltage	30	Volts
Screen-Supply Voltage	30	Volts
Screen Voltage	30	Volts
Positive DC Grid-Number 3 Voltage	0	Volts
Negative DC Grid-Number 3 Voltage	30	Volts
DC Cathode Current	20	Milliamperes
Heater-Cathode Voltage		
Heater Positive with Respect to Cathode	30	Volts
Heater Negative with Respect to Cathode	30	Volts
Grid-Number 3 Circuit Resistance	10	Megohms

BASING DIAGRAM

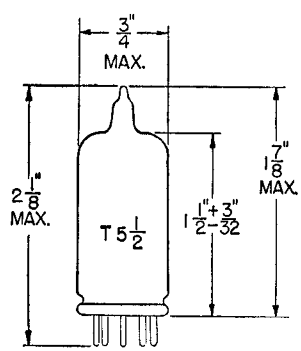


RETMA 7CH

TERMINAL CONNECTIONS

Pin 1—Grid Number 1 (Oscillator Grid)
Pin 2—Cathode and Grid Number 5
Pin 3—Heater
Pin 4—Heater
Pin 5—Plate
Pin 6—Grid Numbers 2 and 4 (Screen)
Pin 7—Grid Number 3 (Signal Grid)

PHYSICAL DIMENSIONS



RETMA 5-2

CHARACTERISTICS AND TYPICAL OPERATION

CONVERTER SERVICE

Plate Voltage	12.6	Volts
Screen Voltage	12.6	Volts
Grid-Number 3 Supply Voltage	0	Volts
Grid-Number 3 Resistor (Bypassed)	2.2	Megohms
Grid-Number 1 Voltage, RMS, approximate	1.6	Volts
Grid-Number 1 Resistor	33000	Ohms
Plate Resistance, approximate	1.0	Megohms
Conversion Transconductance	260	Micromhos
Plate Current	0.45	Milliamperes
Screen Current	1.5	Milliamperes
Grid-Number 1 Current	0.050	Milliamperes
Grid-Number 3 Voltage, approximate $G_c = 5$ Micromhos	−2.2	Volts
Grid-Number 3 Voltage, approximate $G_c = 20$ Micromhos	−1.8	Volts

OSCILLATOR CHARACTERISTICS, NOT OSCILLATING

Plate Voltage	12.6	Volts
Screen, Connected to Plate		
Grid-Number 3 Voltage	0	Volts
Grid-Number 1 Voltage	0	Volts
Amplification Factor‡	9.0	
Transconductance‡	3800	Micromhos
Cathode Current	5.0	Milliamperes
Grid-Number 1 Voltage, approximate Ib = 10 Microamperes	−4	Volts

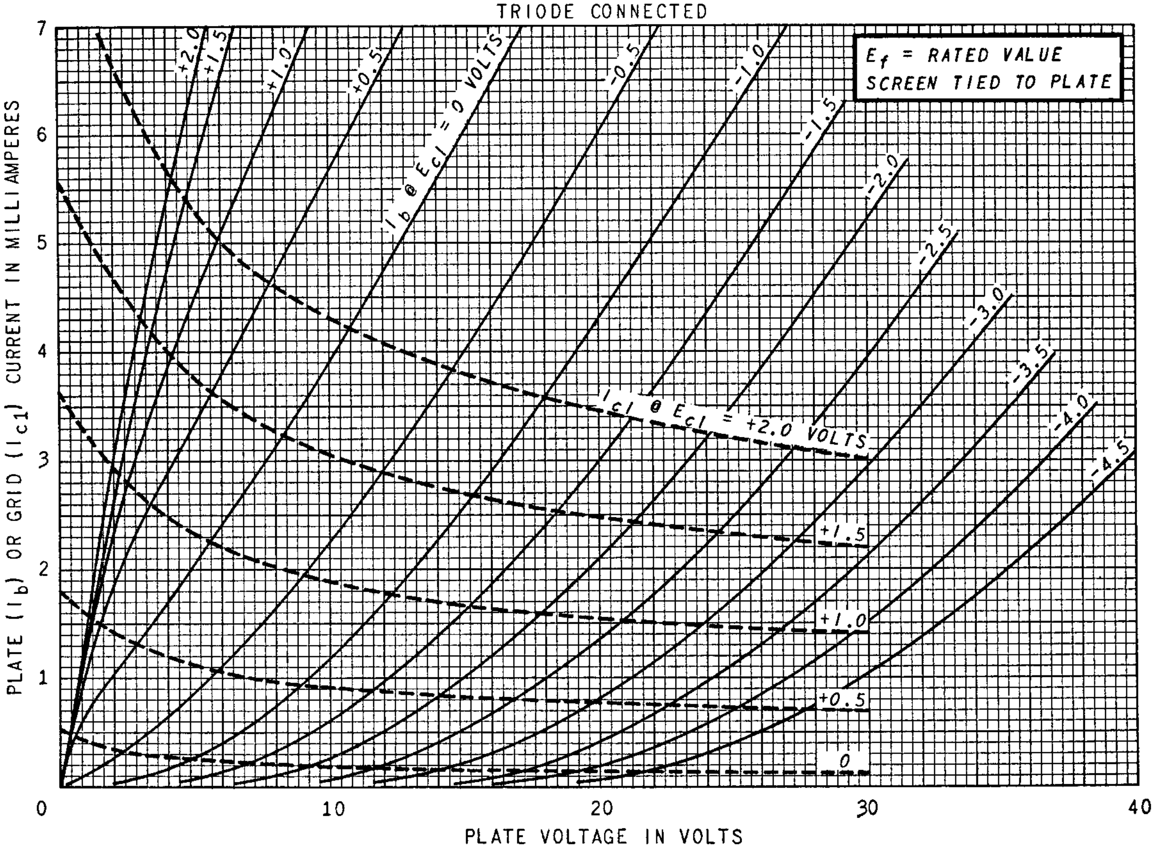
* When used in automobile service from a 12-volt source, under no circumstances should the heater voltage be less than 10.0 volts or more than 15.9 volts. These extreme variations in heater voltage may be tolerated for short periods; however, operation at or near these absolute limits in heater voltage necessarily involves sacrifice in performance at low heater voltage and in life expectancy at high heater voltage. Equipment reliability can be significantly increased with improved supply-voltage regulation.

† With external shield (RETMA 316) connected to pin 2.

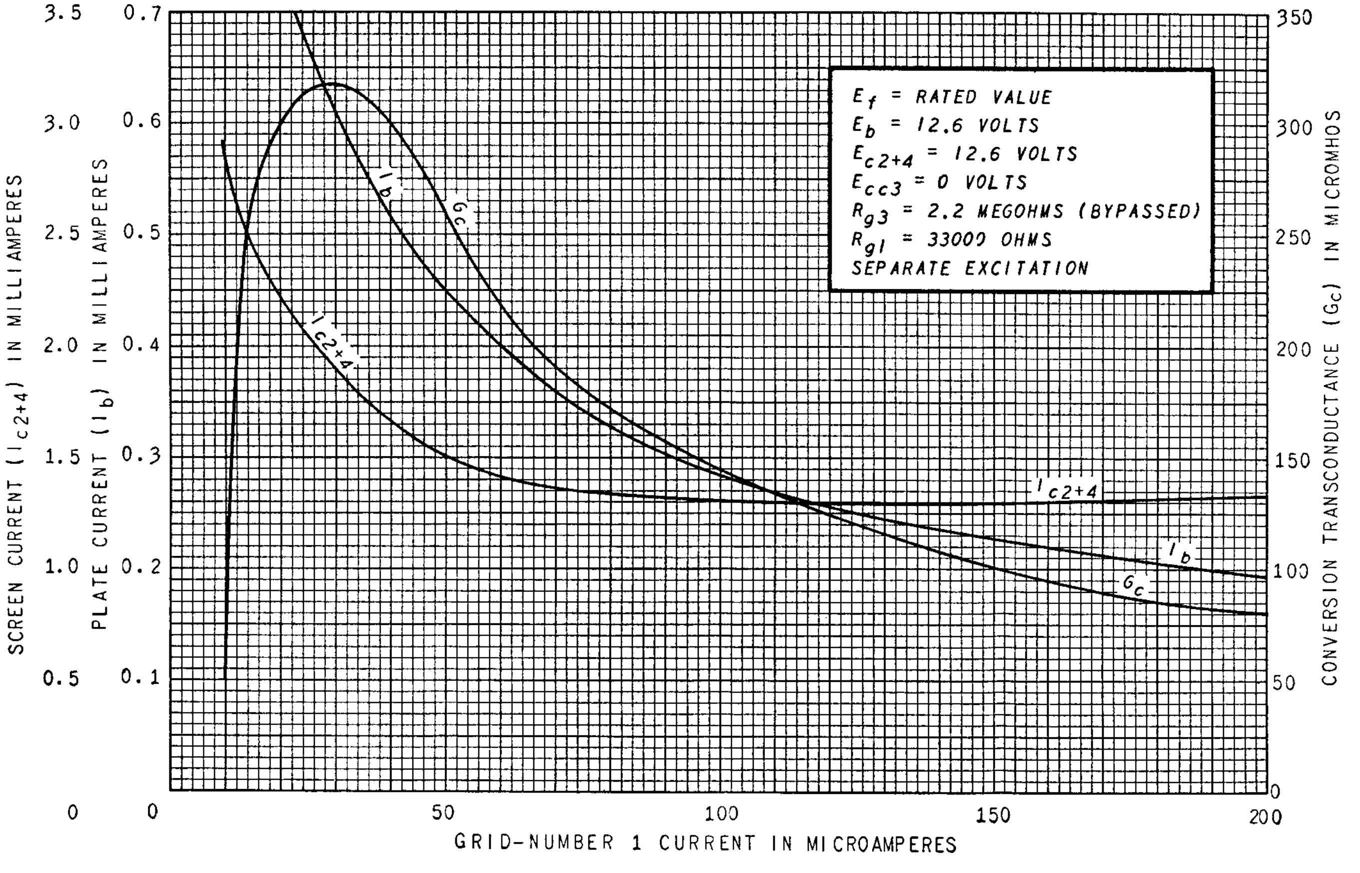
‡ Between grid-number 1 and grids number 2 and 4 connected to plate.

AVERAGE PLATE CHARACTERISTICS

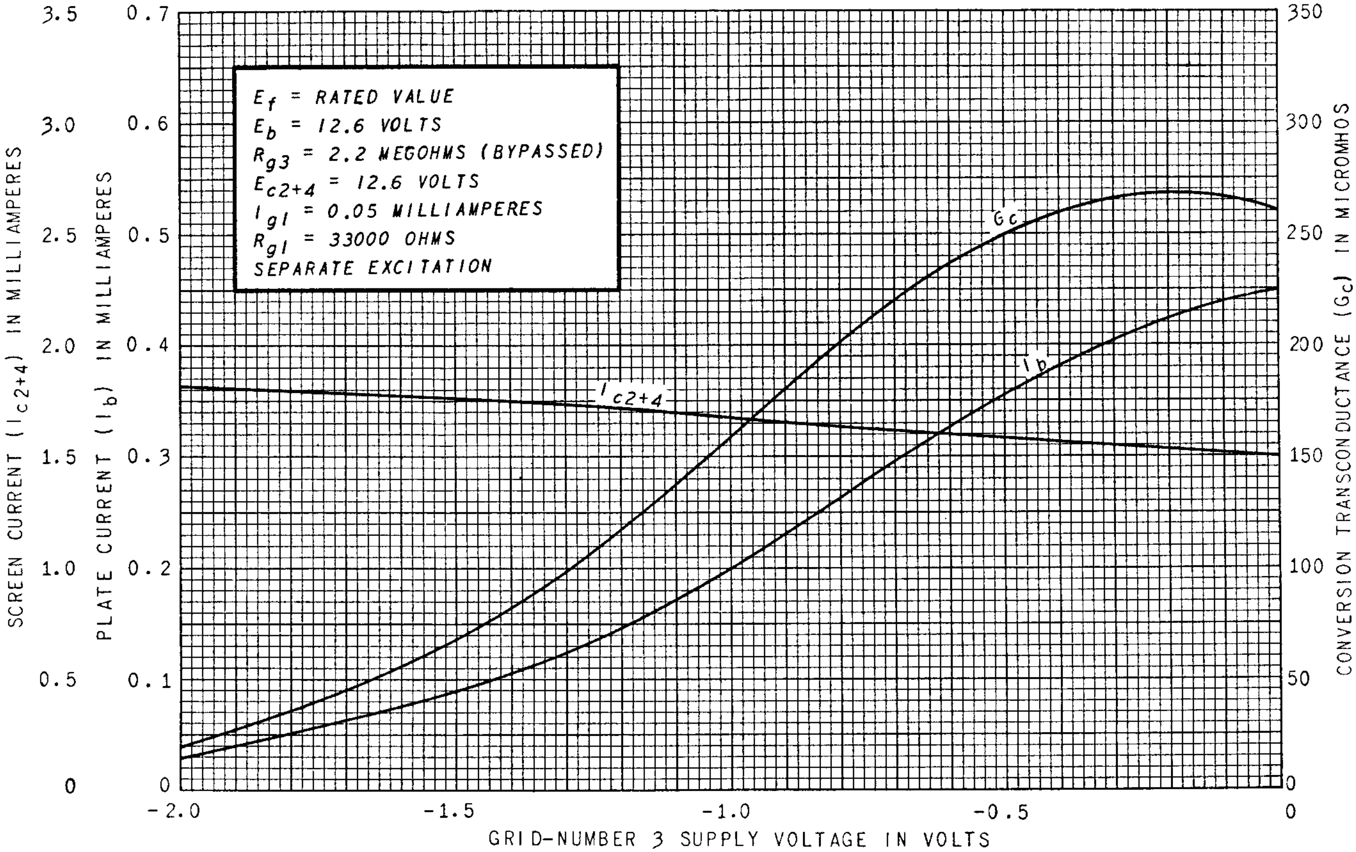
TRIODE CONNECTED



AVERAGE CHARACTERISTICS



AVERAGE CHARACTERISTICS



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